A new species of *Gerdiella* (Gastropoda: Cancellariidae) from the South Atlantic Ocean off Brazil with discussion of an undescribed species

Silvio Felipe B. de Lima
José Carlos N. de Barros
Departamento de Pesca e Aquicultura
Universidade Federal Rural
de Pernambuco
Avenida Dom Manuel de Medeiros, S/N,
Dois Irmãos
52171-030, Recife, BRAZIL
sfblima@yahoo.com.br
mundovan4@yahoo.com.br

Richard E. Petit
806 St. Charles Road
North Myrtle Beach, SC 29582-2846 USA
r.e.petit@att.net

ABSTRACT

Two rare species of Cancellariidae were identified during the study of material from oceanographic dredge hauls undertaken in 2000 by the fishing vessel NATUREZA in deep waters off the state of Pernambuco, Brazil. The species belong to the genus *Gerdiella* Olsson and Bayer, 1972. *Gerdiella alvesi* new species is similar to *Gerdiella cingulata* Olsson and Bayer, 1972, as both have strong, nodular ornamentation that is coarsely cancellated and a heavily thickened, lirated outer lip. A second species, *Gerdiella* sp., is identified based on the protoconch, cancellated ornamentation and the presence of two columellar folds, distinguished from the species described herein by its ornamentation and the absence of a subsutural keel.

Additional keywords: Mericella, Neogastropoda, bathyal, Pernambuco

INTRODUCTION

The family Cancellariidae Forbes and Hanley, 1851, is represented by a large number of fossil and recent gastropods distributed among diverse marine regions throughout the world. The group inhabits subtidal to bathyal sandy and muddy bottoms of tropical and temperate regions, with the greatest diversity found along the eastern Pacific coast of the Americas and the central Indo-Pacific area (Harasewych and Petit, 1982). In the western Atlantic Ocean, the number of known species is still relatively small especially with regard to the Brazilian coast (see for instance Harasewych et al. 1992).

The genus *Gerdiella* Olsson and Bayer, 1972, was introduced to include three species described by these two authors from bathyal depths of the Florida Straits and south of Jamaica. These species are: *Gerdiella gerda* from the Straits of Florida, 648–622 m; *G. santa* from the Straits of Florida, 648–622 m; and *G. cingulata* from S of Jamaica, 549–530 m. Another specimen of *G. cingulata*, collected in 1961 by R/V OREGON, sta. 3552, 130 miles ESE of New Orleans, Louisiana, 29°07′ N, 88°05′ W, trawled in 732 m, is now catalogued as USNM 811462. No additional species of *Gerdiella* have been discovered until now.

The genus *Mericella* Thiele, 1929, was introduced by Thiele to accommodate the bathyal *Mericella jucunda* (Thiele, 1925) from off Tanzania. He originally placed the species in *Cancellaria (Merica). Mericella bozzetti* Petit and Harasewych, 1993, was described from off Somalia. Petit and Harasewych at the same time placed *Cancellaria (Merica) paschalis* Thiele, 1925, in the genus *Mericella*. *Mericella paschalis* was described from a broken fragment, but recently collected material from off of Mozambique allowed Verhecken and Bozzetti (2006: 15–16) to confirm the allocation of the species in *Mericella*.

In a recent paper, Verhecken and Bozzetti (2006) placed *Gerdiella* in the synonymy of *Mericella* Thiele, 1929. As observed by those two authors, *Mericella* was discussed by Olsson and Bayer in the original description of *Gerdiella*. Verhecken and Bozzetti (2006: 17) stated that the two genera are "very much alike conchologically, the main differences being the relative spire height and the suture form." They also considered relative aperture heights, observing that, as *Gerdiella* has a shorter aperture, the ratio in this latter genus agrees "with Petit and Harasewych (1993: 223) who consider a value of >0.5 a diagnostic feature for *Mericella*." Verhecken and Bozzetti did not point out that Petit and Harasewych used additional characters to differentiate these genera. Verhecken and Bozzetti also stated that "there are no important differences in shell characteristics that would justify a separation between *Mericella* and *Gerdiella*." Although shown on their table, the text does not mention the fact that *Gerdiella* species have axial ribs on the protoconch. However, in an earlier work Verhecken (2002:

513) stated that "protoconch characters are not considered of diagnostic importance at generic level by this writer." We disagree with that approach, especially when protoconch characters allow for the distinction of western Atlantic taxa from those from the Indian Ocean. We consider *Gerdiella* to be a valid genus with species known at present only from the western and southern Atlantic Ocean.

The geographical grouping of *Mericella*, with all known species being from off eastern Africa, and *Gerdiella*, with all known species being from the western and southern Atlantic, is obvious.

Verhecken and Bozzetti (2006: 17) mentioned that the eastern Pacific *Cancellaria corbicula* Dall, 1908, was placed in *Gerdiella* by Kaicher (1978: card 1952). We do not agree with that placement as the species has a smooth protoconch and an aperture height greater than one-half shell height. Its generic placement remains in doubt.

Verhecken (2002: 512) studied three juvenile and fragmented shells collected from the Continental Slope of Pernambuco, northeastern Brazil, during probes of the CHALLENGER EXPEDITION in 1873. Those specimens were considered by him to be conspecific and the possibility that they represent a new species of *Gerdiella* was mentioned. We agree with Verhecken that more and better specimens are needed for identification to be confirmed.

In this paper we describe a fourth species of *Gerdiella* from the Western Atlantic, collected from the Continental Slope off Pernambuco, Brazil. This is the first definite record of the genus for the South Atlantic. The soft parts and radula are as yet unknown, but the conchological characters are sufficient to justify the naming of a new species.

MATERIALS AND METHODS

All specimens examined were obtained by the research vessel NATUREZA along the Continental Slope off Pernambuco during oceanic prospecting work for the Research and Management Center of Fishing Resources of the Northeastern Coast—CEPENE/IBAMA. At the Malacology Laboratory of the Universidade Federal Rural de Pernambuco, the specimens were sorted under a stereomicroscope, cleaned in a diluted detergent solution, rinsed in distilled water, and air-dried. Shells were measured using a stereomicroscope with eyepiece micrometer and photographed with a Nikon COOLPIX S85 digital camera. Scanning electron micrographs were made using a Jeol JSM 6360 Scanning Electron Microscope at the Electron Microscope Laboratory of the "Instituto Tecnológico de Pernambuco (ITEP)".

Abbreviations used: ANSP, Academy of Natural Sciences, Philadelphia; LMUFRPE, Laboratório de Malacologia da Universidade Fedral Rural de Pernambuco, Brazil; MNRJ, Museu Nacional, Rio de Janeiro, Brazil; MORG, Museu Oceanográfico do Rio Grande, Rio Grande do Sul, Brazil; MZUSP, Museu de Zoologia da Universidade de São Paulo, Brazil.

SYSTEMATICS

Family Cancellariidae Forbes and Hanley, 1851
Genus *Gerdiella* Olsson and Bayer, 1972

Type Species: *Gerdiella gerda* Olsson and Bayer, 1972 by original designation. Recent, Caribbean.

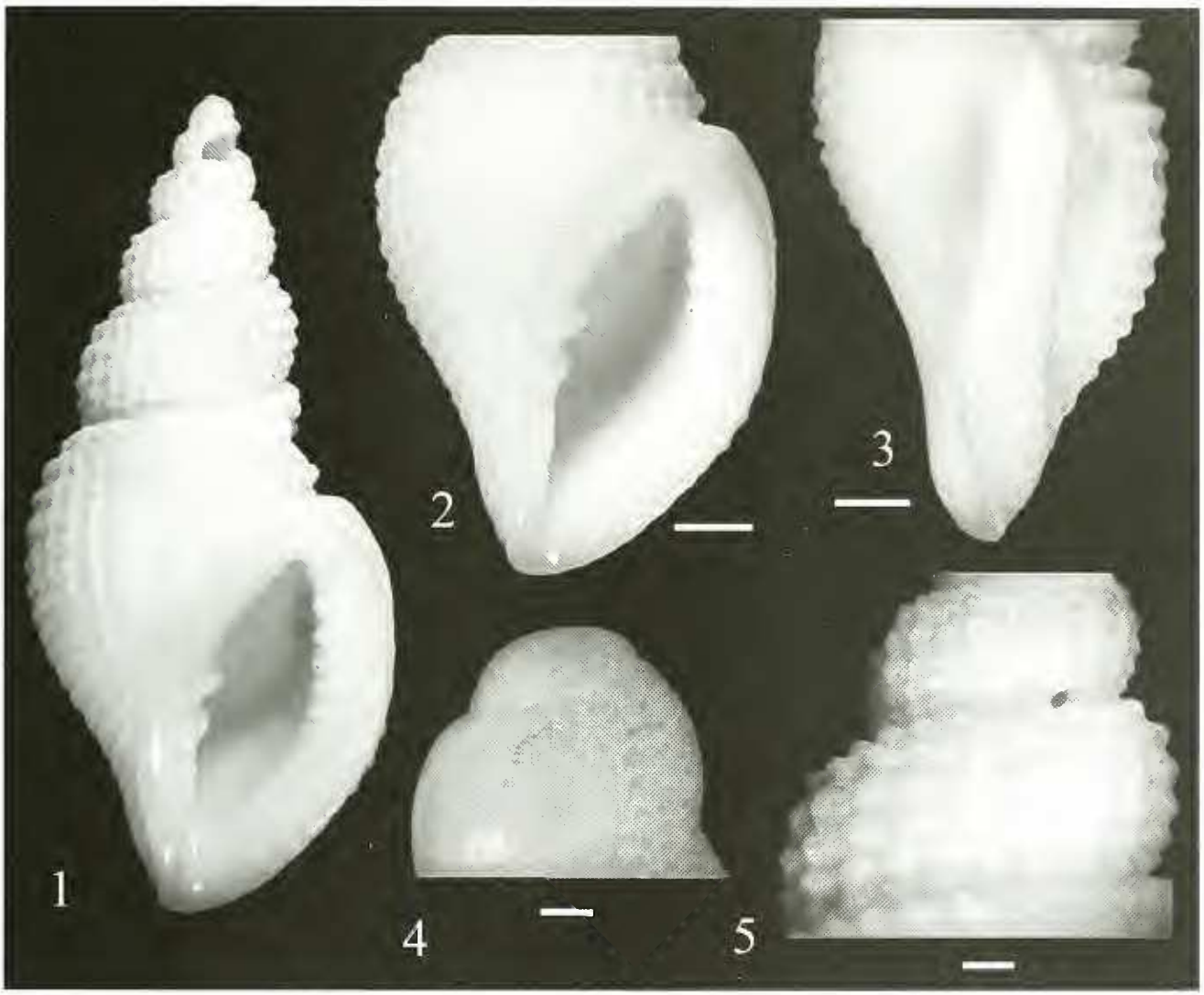
Gerdiella alvesi new species
(Figures 1–5)

Description: Shell fusiform, stout, white, strongly ornamented axially and spirally, entirely marked by growth lines between spiral cords. Protoconch globose, cap-shaped, with 1.5 whorls, ornamented by numerous microscopic spiral threads and weak axial ribs on final portion. Transition to teleoconch marked by strong raised axial rib. Nucleus small when compared with rest of protoconch, which is inflated. Teleoconch with 5.5 whorls. Spire narrow, smaller than body whorl. Whorls rounded, strongly ornamented, with reticulated sculpture. Spiral cords intersect the equally strong axial ribs, forming strong nodules with a pustulose aspect, which progressively increase in size toward body whorl. First whorl with 20–22 axial ribs and 6–7 spiral cords, more often 6. Second whorl with 20 axial ribs and 7 spiral cords, third whorl with 22 axial ribs and 7 spiral cords, fourth whorl with 26 axial ribs and 7 spiral cords, fifth whorl with 32–33 axial ribs and 4 spiral cords. Body whorl with 32 axial ribs and 4 upper spiral cords. Suture strongly constricted, bordered by a strong, nodular, subsutural spiral cord. Base imperforate, strongly conical and gently convex, ornamented by 15 nodular spiral cords, 5 of which form siphonal fasciole. Aperture elliptical, fusiform, narrow at terminations. Peristome shiny, very thick and strongly expanded. Outer lip thick, with a broad posterior sinus, with12 denticles, most anterior denticle more elongated. Parietal region strongly reflected, with internal nodules. Columella gently concave, with two pronounced, rounded folds, the adapical fold slightly larger. Siphonal canal short and narrow in distal extremity.

Type Material: Holotype, MZUSP 78932 [Length 22 mm, Width 8.3 mm]; juvenile shells: 1 paratype, ANSP 413550; 3 paratypes, MORG 50.688; 2 paratypes, MNRJ 10718; 4 paratypes, MZUSP 78933. All from type locality, 18 Nov. 2000.

Type Locality: Northeastern Brazil, off the State of Pernambuco, 08°46.5′ S, 34°44.5′ W, muddy bottom, 690 m.

Geographical Distribution: Continental slope off Pernambuco, 08°46.5′ S, 34°44.5′ W, northeastern Brazil.



Figures 1–5. *Gerdiella alvesi* new species, holotype MZSP 78932, length = 22 mm. **1.** Apertural view; **2.** Detail of aperture; **3.** Lateral view showing profile of outer lip. **4.** Protoconch. **5.** View of ornamentation of second and third teleoconch whorls. Scale bars: Figures 2, 3, 5 = 500 μm; Figure 4 = 200 μm.

Etymology: Named in honor of Dr. Marcos Souto Alves of the Biology Department, in the field of Zoology at the Universidade Federal Rural de Pernambuco (UFRPE) for having sent the first author under an internship at the Malacology Laboratory of the UFRPE.

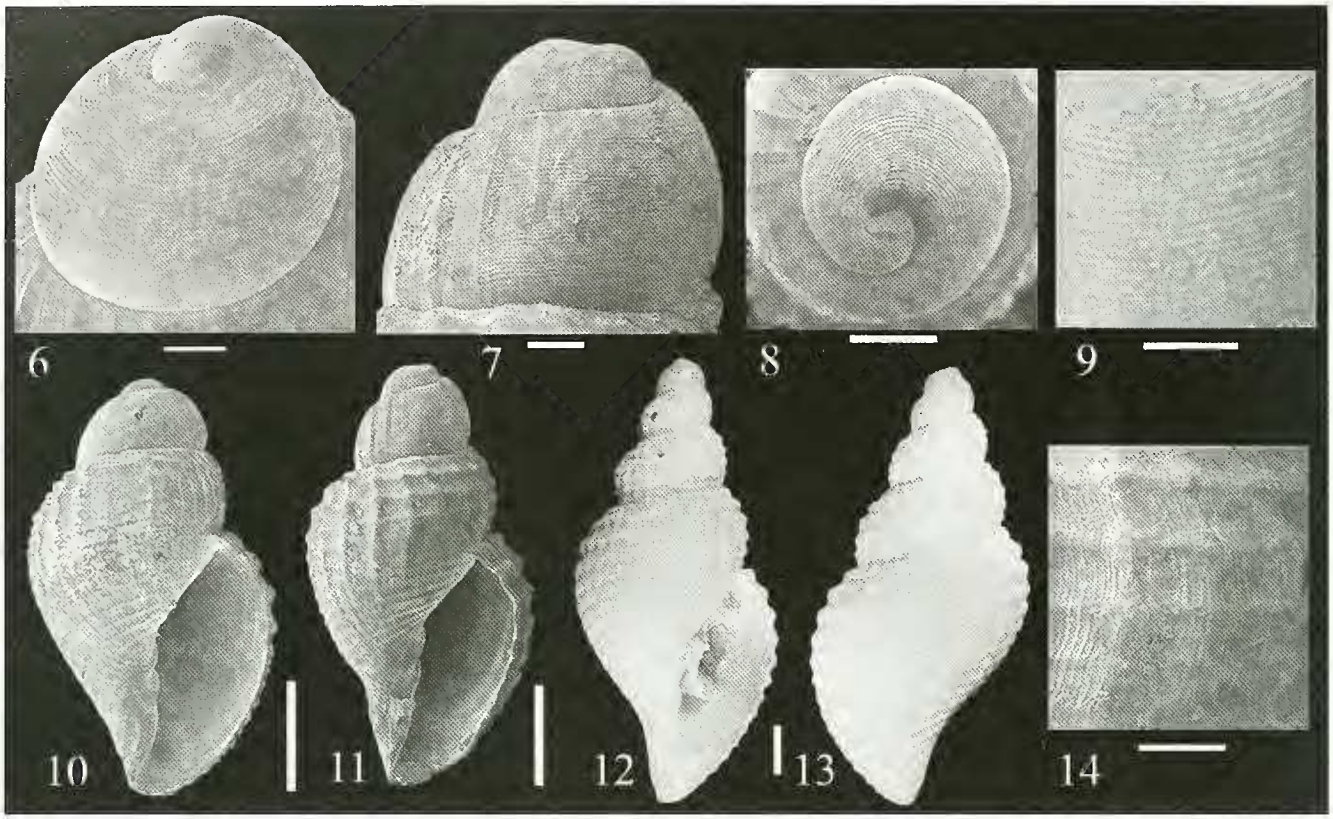
Remarks: The protoconch of the holotype is not well illustrated as it is damaged. Nonetheless, we were able to characterize the protoconch of juvenile specimens of the new species (Figures 6–11).

Gerdiella sp.
(Figures 15–19)

Material Examined: One damaged specimen, MZUSP 78934, length 18.3 mm, off the state of Pernambuco, northeastern Brazil, 08°46.5′ S, 34°44.5′ W, muddy bottom, 690 m, 18 Nov. 2000.

Geographical Distribution: The Continental Slope off Pernambuco, northeastern Brazil.

Remarks: The single specimen of *Gerdiella* sp. may represent a new species. However, we prefer not to name it as the shell is damaged and eroded. The protoconch of this species has the same characteristics, and the same number of whorls, as *Gerdiella alvesi*. This specimen has two equal and very narrow columellar folds, slightly different from those of *G. alvesi*. The first, second and third post-nuclear whorls are rounded and ornamented by finely cancellated axial ribs and spiral cords, forming small nodules at their intersections, similar to those of *Gerdiella gerda* and *Gerdiella santa*. The axial ribs are thicker than the spiral cords, (9 on the body whorl), as opposed to 6 for *G. alvesi*. The subsutural cord is weak on the first and second whorls of the teleoconch.



Figures 6–14. Juveniles of *Gerdiella alvesi* new species. **6–8.** Protoconch under SEM, MORG 50.688; **9.** SEM of protoconch of paratype MORG 50.688 showing microscopic spiral threads. **10–11.** SEM of paratypes MORG 50.688. **12–13.** Paratype, MZUSP 78933. **14.** SEM of paratype MORG 50.688 showing growth lines. Scale bars: Figures 6–8 = 200 μm; Figure 9 = 50 μm; Figures 10–13 = 500 μm; Figure 14 = 50 μm.

The subsutural region is flat, encompassing the first and second spiral cords, which do not form a shoulder. There are seven spiral cords on the first and second whorls, and 10 on the third. There are 27, 30, and 36 axial ribs on the first, second and third post-nuclear whorls, respectively. In relation to *G. alvesi*, *Gerdiella* sp. has the same number of spiral elements on the first and second post-nuclear whorls. This number is higher, however, on the third whorl. The number of axial ribs on the first three whorls of the teleoconch of *G. alvesi* is less than that of *Gerdiella* sp.

DISCUSSION

The conchological characters of *Gerdiella* sp. cannot be completely and conclusively compared to any of its congeners until better material is collected for study at the species level. The analysis presented above distinguishes this species from the unnamed shell figured by Verhecken (2002: figs. 9, 10) by the greater number of axial and spiral ribs and threads on the first and second whorl. *Gerdiella alvesi* stands out from its congeners by the strong, uniform axial and spiral ornamentation, which forms large, rounded nodules that are quite pronounced, especially on the body whorl. The heavily thickened outer lip is very similar to that of *Gerdiella gerda*, principally on the sigmoid contour, and is lirated in the same way as *Gerdiella cingulata*, but not as coarsely as described by Olsson and Bayer (1972: 879). Two columellar folds are present on all the species. In both *G. cingulata* and *G. alvesi* the adapical fold is larger and there are no tubercles between the folds in the latter of the two species. In *G. alvesi*, there is no projection of the parietal callus on the outer lip, which is present in *G. gerda* and *G. santa*. Among the *Gerdiella*, the spire of *G. alvesi* has the least number of whorls and lacks varices.

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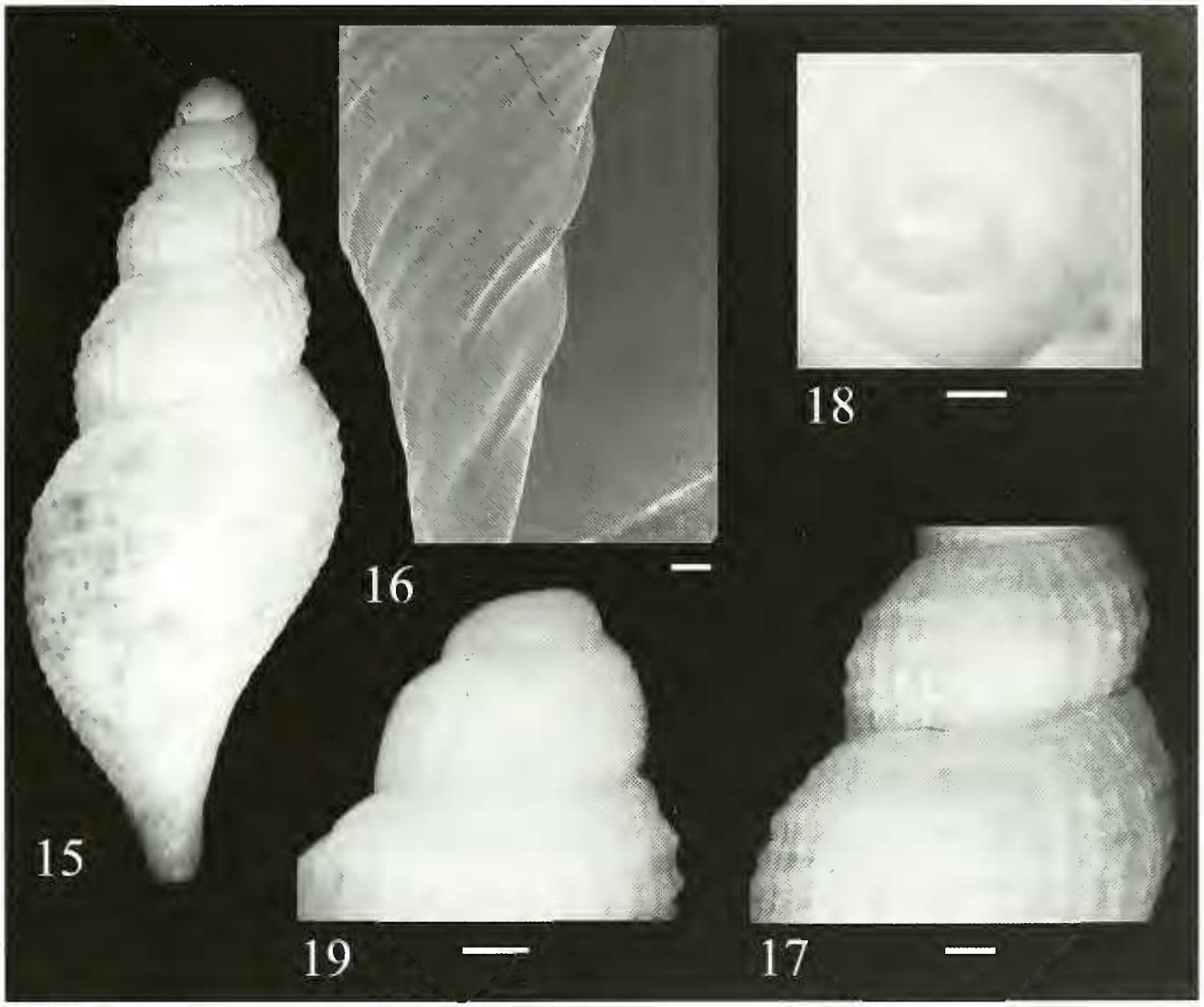

Figures 15–19. *Gerdiella* sp., MZSP 78934, length = 18.3 mm. **15.** Abapertural view. **16.** Columellar folds under SEM. **17.** View of ornamentation and subsutural flattening of the second and third teleoconch whorls. **18–19.** Protoconch. Scale bars: Figures 16, 18, 19 = 200 μm; Figure 17 = 500 μm.

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